

ABSTRACT

For a silicon single crystal substrate PW to which boron, arsenic or phosphorus is added as a dopant in a concentration of $1 \times 10^{19} / \text{cm}^3$ or more and in which a CVD oxide film 1 is formed on a rear surface, wet etching of an oxide film on a main surface of the silicon single crystal substrate PW is performed by a hydrofluoric acid treatment while the CVD oxide film 1 is allowed to remain (step S5). Next, the silicon single crystal substrate PW is baked at 950°C or less in a hydrogen gas to perform dry etching of a natural oxide film on the main surface of the silicon single crystal substrate PW (step S7). Further, a sub-epitaxial layer 2 is formed at a temperature lower than a growth temperature of a main epitaxial layer 3 (step S8) and the main epitaxial layer 3 is formed on the sub-epitaxial layer 2 at a temperature of 900 to 1200°C (step S9).